Amendments to the Specification

In the Title:

Please replace the title with the following rewritten title:

SCANNING MICROSCOPE COMPRISING A CONFOCAL SLIT SCANNER FOR ~~REPRODUCING~~ IMAGING AN OBJECT

In the Specification:

Before paragraph [0002], please insert the heading --BACKGROUND--.

Before paragraph [0007], please insert the heading --SUMMARY OF THE INVENTION--.

Please replace paragraph [0007] with the following rewritten paragraph:

[0007] Therefore, it is an object of the present invention ~~has the objective of creating and refining~~ to provide a scanning microscope ~~of the generic type in such a way that~~ with which an object can be detected with an improved signal-to-noise ratio, even at a high scanning speed.

Before paragraph [0008], please insert new paragraph [0007.1] as follows:

--[0007.1] The present invention provides a scanning microscope for imaging an object. The scanning microscope includes:

a light source;

a spectrally selective detection device;

an illumination beam path extending from the light source to the object;

a detection beam path extending from the object to the detection device, at least one wavelength range of light extending along the detection beam path being detectable using the spectrally selective detection device;

a spectrally selective element useable to select light from the light source so as to

illuminate the object, the spectrally selective element being useable to mask out of the detection beam path the selected light from the light source reflected or scattered on the object;

an illumination slit diaphragm disposed in the illumination beam path and configured to generate a linear illumination pattern in a region of the object; and

a detection slit diaphragm disposed in the detection beam path and configured to detect the light coming from the linear illumination region from a focal plane so as to provide a confocal slit scanner;

wherein at least one of a slit length and a slit width of at least one of the illumination slit diaphragm and the detection slit diaphragm are variably settable.--.

Please delete paragraph [0008].

Please replace paragraph [0018] with the following rewritten paragraph:

[0018] The spectrally selective element comprises an active optical component that can be actuated. Consequently, provided that the appropriate actuation is present, it can then be adjusted in an almost infinitely variable manner. As a matter of principle, all of the embodiments of a spectrally selective element disclosed in DE 199 06 757 A1 can be employed for the scanning microscope according to the present invention, so that the disclosures contained in DE 199 06 757 A1 are explicitly included here and are thereby considered to be known. ~~It is especially preferred for two~~ <u>Two</u> AOTF crystals ~~to~~ <u>may</u> be provided as the spectrally selective element, whereby one of them forms the active optical component that is exposed to an appropriate ultrasound wave. The other AOTF crystal is arranged as an optically inactive component behind the first AOTF crystal in the detection beam path, and in fact, it is arranged in such a way that it reverses a spectral splitting of the luminescent light coming from the luminescent object as well as a separation of the different polarization directions caused by the first AOTF crystal. For this purpose, the second AOTF crystal is positioned so as to be rotated by 180° relative to the longitudinal axis of the first AOTF crystal. In another embodiment, the second AOTF crystal is likewise exposed to an ultrasound wave. In this arrangement, the crystal

serves to further suppress the residual light that was not effectively reflected by the first AOTF crystal.

Please replace paragraph [0021] with the following rewritten paragraph:

[0021] In ~~an especially~~ a preferred embodiment, the detection device has a flat or linear detector. This detector has a spatial resolution corresponding to its flat or linear shape. In this manner, the flat or linear detector can all at once detect the detection light that is passing the detection slit diaphragm and that has been spectrally split and selected. In the case of a flat detector, the spatial information about the scanned object is detected in one direction, namely, parallel to the longitudinal side of the detection slit diaphragm. Perpendicular thereto, the spectral component of the detection light that was spatially fanned out by the means for spectral splitting is detected for each imaged object point.

Please replace paragraph [0028] with the following rewritten paragraph:

[0028] In ~~a particularly preferred~~ an embodiment, the scanning microscope is configured in the form of a multi-photon microscope. Accordingly, the object or a marker that serves to mark the object can be excited with the methods of multi-photon excitation and then detected. Therefore, a suitable light source is to be provided for this purpose, for example, a laser light source that emits a pulsed light in the near infrared spectrum. Normally, a titanium-sapphire laser is employed for this purpose. Moreover, the spectrally selective element as well as the spectrally selective detection device are to be set in such a way that, for instance, a two-photon fluorescence excitation takes place with light having a wavelength in the range from 720 nm to 1000 nm and this excited fluorescent light is detected in the range from 400 nm to 600 nm. The pulse duration of the light emitted by the titanium-sapphire laser preferably lies in the ps range. Aside from the two-photon fluorescence, other non-linear effects in the specimen can also be generated and detected such as, for example, the generation of higher harmonic, for instance, second or third harmonic generation, or else CARS (Coherent Anti-Stokes Raman Scattering).

Before paragraph [0029], please insert the heading --BRIEF DESCRIPTION OF THE DRAWINGS--.

Please replace paragraph [0029] with the following rewritten paragraph:

[0029] There are, of course, many possibilities to advantageously configure and refine the teaching of the present invention. ~~To this end, reference is hereby made, on the one hand, to the patent claims that are subordinate to Patent Claim 1 and, on the other hand, to the explanation below of preferred embodiments of the invention, making reference to the drawing.~~ Generally preferred embodiments and refinements of the invention will be presented in conjunction with the explanation of the preferred embodiments of the invention, making reference to the ~~drawing~~ drawings. The drawing shows the following:

Figure 1 – a schematic depiction of a first embodiment of a scanning microscope according to the invention for imaging an object;

Figure 2 – a schematic depiction of a second embodiment of a scanning microscope according to the invention for imaging an object;

Figure 3 – a schematic depiction of a section of the embodiment according to Figure 2, in a perspective view;

Figure 4 – a schematic depiction of part of a detection device of another embodiment;

Figure 5 – a schematic depiction of an embodiment of a spectrally selective element known from the state of the art; and

Figure 6 – a schematic depiction of an embodiment of a spectrally selective element according to the present invention, in a perspective view.

Before paragraph [0030], please insert the heading --DETAILED DESCRIPTION--.

Please replace paragraph [0041] with the following rewritten paragraph:

[0041] ~~Figures 5 and 6 show~~ Fig. 5 shows a detailed enlargement of a spectrally selective element 8 according to the prior art. The light beam – whose cross section is punctiform – of the light from the laser light source 2 strikes a mirror 35 that reflects the light into a first AOTF crystal 36. If the AOTF crystal 36 is set in such a way that no light from the laser light source 2 is selected for illuminating the object, this light passes through the first AOTF crystal 36 in such a manner that it is completely absorbed by the beam trap 10. If the first AOTF crystal 36 is set in such a way that, for example, light having a certain wavelength is selected for illuminating the object, then this light is deflected as it passes through the first AOTF crystal 36 – with first-order diffraction – so that it enters the illumination beam path 3 and is used to illuminate the object, which is indicated by the lower arrow on object 1. The selected light from the laser light source 2 that is reflected and/or scattered on the object passes through the first AOTF crystal 36 in the opposite direction, then striking – with first-order diffraction – the mirror 35 that reflects towards the laser light source 2 the reflected and/or scattered light coming from the object. The fluorescent light coming from object 1 passes through the first AOTF crystal 36 with zero-order diffraction and passes through the mirror 35 to the second AOTF crystal 37. The AOTF crystal 37 is positioned so as to be rotated by 180° around the schematically indicated – optical – axis 38. In this manner, the second AOTF crystal 37 reverses the spectral splitting by the first AOTF crystal 36 of the fluorescent light as well as the polarization separation. The two mirrors 39 serve merely to coaxially bring the light that passes through the AOTF crystals 36, 37 back to the optical axis 38.